

REMARKS

Claims 1-3 are presently pending in the application.

Claims 1 and 2 have been amended to recite that the composition “consists essentially of” components (A), (B), (C), and newly added (D), which is a specific sulfur-containing compound. Support for these amendments may be found in the specification at least at page 22, lines 3-7. Claims 1 and 2 have also been amended to recite that the kinematic viscosity is measured at a temperature of 100°C, which is supported in the specification at least at page 5, lines 8-11. No new matter has been added by these amendments, and entry is respectfully requested. Further, in view of these amendments, withdrawal of the objection to claims 1 and 2 is respectfully requested.

The Examiner has rejected claims 1 and 3 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,482,778 of Tersigni (“Tersigni”) in view of U.S. Patent Application Publication No. 2001/0044389 of Komiya (“Komiya”) and further in view of U.S. Patent Application Publication No. 2004/0242434 of Yagishita (“Yagishita”). Additionally, claims 1-3 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,583,092 of Carrick (“Carrick”) in view of Komiya. Applicants respectfully traverse these rejections for the reasons set forth previously on the record, which Applicants rely upon in full, and for the additional reasons which follow, and respectfully request reconsideration and withdrawal of the rejections.

Rejection Under § 103(a) Based on Tersigni in view of Komiya and Yagishita

The Examiner again argues that Tersigni teaches a transmission fluid composition comprised of a phosphorus-containing additive and a base oil with a kinematic viscosity of 3 to 8 centistokes at 100°C, as well as a viscosity index improver so that the kinematic viscosity of the composition is increased to at least 5.0 cSt at 100°C. The phosphorus content is allegedly 0.02 to 0.08 percent by mass. Finally, the Examiner argues that Tersigni teaches that antioxidants, including sulfurized phenolic antioxidants, are typically added to the composition in the amount of 0 to 1 mass percent. The Examiner acknowledges that Tersigni is silent as to the %Cp of the disclosed mineral oil.

However, the Examiner argues that Komiya discloses a lubricating composition for transmissions which contains mineral oil, such as paraffinic or naphthenic mineral oil with a kinematic viscosity of 1 to 4 mm²/s. Additionally, the %Cp of the oil is allegedly 70 or higher as defined by ASTM D 3238. The Examiner takes the position that the transmission oils disclosed by Tersigni and Komiya both contain similar mineral oils, and would therefore display the same characteristics. Further, the Examiner argues that Komiya specifically uses mineral oil with a % Cp from 75 to 81 since such a base oil displays excellent low temperature fluidity. Therefore, the Examiner concludes that it would have been obvious to use a base mineral oil having a % Cp of 75-81 in the transmission oil of Tersigni because Komiya teaches that enhanced low temperature fluidity would result.

The Examiner additionally argues that Yagishita discloses a lubricating composition comprising low amounts of phosphorus and sulfur, as well as viscosity index improvers, such as polymethacrylates having a molecular weight from 5,000 to 350,000, which are added to the composition to improve shear stability. Therefore, the Examiner concludes that it would have been obvious to one having ordinary skill in the art at the time of the invention for Tersigni to utilize the specific polymethacrylates disclosed by Yagishita for the shear stability advantages.

In response to Applicants' previous arguments and data regarding the criticality of the claimed phosphorus and sulfur contents, the Examiner argues that Tersigni and Carrick clearly anticipate the claimed amounts. Further, the Examiner takes the position that the previously presented comparative data are not persuasive for demonstrating the criticality of the %Cp of the base oil. Applicants respectfully traverse this rejection as follows.

As previously explained on the record, the purpose of the presently claimed invention is to provide a low viscosity transmission lubricating oil composition which can enhance fuel efficiency and improve the durability of gears and the shifting properties of wet clutches, including long-lasting shifting properties. Applicants have developed the presently claimed composition with a low viscosity of 5.0 to 6.0 mm²/s at 100° C and a sulfur content of not more than 0.15 percent by mass of the composition (0.05 to 0.14 % in a preferred embodiment). This composition is obtained by adding appropriate amounts of (B) a phosphorus compound in an amount of 0.025 to 0.05 mass % as P (0.03 to 0.035 % in a preferred embodiment), (C) a viscosity index improver ("VII") comprising a dispersion type or non-dispersion type

polymethacrylate (PMA) having a number average molecular weight of from 5,000 to 35,000, and (D) a sulfur-containing compound which is at least one compound selected from the group consisting of thiazole compounds, thiadiazole compounds, dithiocarbamate compounds, molybdenum dithiocarbamate compounds, dihydrocarbylpolysulfide compounds and sulfurized ester compounds, to (A) a specific mineral lubricating base oil having a kinematic viscosity of 2.3 to 3.4 mm²/s at 100°C (2.5 to 3.3 in a preferred embodiment) and a %Cp of not less than 70 (73 to 82 in a preferred embodiment). The resulting composition is highly fuel efficient and capable of improving the durability of gears and the shifting properties of wet clutches. The presently claimed composition consists essentially of components (A), (B), (C), and (D), thus excluding additional components which would affect the basic and novel characteristics of the claimed composition.

Tersigni teaches a transmission fluid composition which contains, in addition to a base oil, two main components: a zinc detergent and at least one phosphorus-containing additive. Optional ingredients may include, for example, dispersants, friction modifiers, viscosity index improvers, detergents, antioxidants, etc. (col. 4, lines 40-47). In the Examples, Tersigni demonstrates the benefits of combining zinc detergents and phosphorus-containing additives. Tersigni also teaches that the combination of the zinc detergent and the phosphorus-containing additive provides a transmission fluid composition with enhanced performance properties, such as high steel-on-steel coefficients of friction (col. 1, lines 7-12).

However, even if, *arguendo*, the proposed combination of Tersigni with Komiya and Yagishita were to teach or suggest a composition comprising claimed components (A), (B), (C), and (D), the presently claimed composition consists essentially of these components, and thus excludes additional components which would affect the basic and novel characteristics of the composition. That is, the zinc detergent of Tersigni, which is a critical component to the Tersigni composition, would be excluded from the present claims. Clearly, there would have been no motivation to modify the composition of Tersigni to remove the zinc detergent, since it is an essential component which affects the basic and novel characteristics of the composition, such as performance properties. Further, no such motivation is provided by Komiya or Yagishita. Accordingly, even the proposed combination of Tersigni with Komiya and Yagishita would not result in a composition which consists essentially of claimed components (A), (B),

(C), and (D), and reconsideration and withdrawal of the § 103(a) rejection are respectfully requested.

Rejection Under § 103(a) Based on Carrick in view of Komiya

Regarding claims 1-3, the Examiner argues that Carrick discloses a lubricating oil composition comprising base oil, specifically mineral oil of the paraffinic and naphthenic type, and specific amounts of phosphorus and sulfur which allegedly overlap the claimed amounts. Carrick allegedly also discloses viscosity index improvers, including polymethacrylates, and a kinematic viscosity of the composition of 5 to 16.3 mm²/s at 100° C. The Examiner acknowledges that Carrick does not teach the kinematic viscosity and %Cp of the mineral oil. However, the Examiner argues that in view of the teaching of Carrick of the kinematic viscosity of the final composition and the fact that the composition comprises mineral oil and a viscosity index improver up to 10 wt%, a sufficient amount of viscosity index improver was added to the mineral oil to raise it to 5 mm²/s at 100° C from the initial viscosity. Therefore, the Examiner concludes that it would have been obvious to one having ordinary skill in the art at the time of the invention for the initial kinematic viscosity of the mineral oil to also overlap the claims.

The Examiner further argues that Komiya discloses a lubricating composition containing mineral oils, such as paraffinic and naphthenic mineral oils which have a kinematic viscosity of 1 to 4 mm²/s, which allegedly overlaps the claimed viscosity. Komiya allegedly also discloses the %Cp of the oil at 70 or higher. Therefore, the Examiner takes the position that the transmission oils disclosed by Carrick and Komiya contain similar mineral oils, paraffinic and naphthenic oils at the same viscosity, and therefore would display the same characteristics. Therefore, the Examiner concludes that it would have been obvious for the transmission oil composition disclosed by Carrick to comprise a base mineral oil having a %Cp from 75-81, as taught by Komiya, for the advantages of enhanced low temperature fluidity. Applicants respectfully traverse this rejection as follows.

Carrick teaches a lubricating oil composition which contains: (A) a base oil, (B) an alkali or alkaline earth metal salt of a saligenin derivative, (C) an alkali or alkaline earth metal salt of a hydrocarbon-substituted salicylic acid, and (D) a metal salt of a phosphorus-containing compound. The composition of Carrick preferably also includes (E) an acylated nitrogen-


containing compound, (F) a boron-containing compound, and (G) a dispersant viscosity index modifier. Optional additives may be included, such as corrosion-inhibiting agents, antioxidants, viscosity modifiers, pour point depressants, etc. (col. 24, lines 63-67). However, Carrick does not teach or suggest that component (B), an alkali or alkaline earth metal salt of a saligenin derivative, may be eliminated from the composition. In fact, this is a critical component of the Carrick composition. Carrick demonstrates in the Examples and Comparative Examples (see, for example, Comparative Example C-1 which does not contain component (B)), that component (B) is necessary for providing the observed properties. Carrick specifically teaches that by providing lubricating oil compositions which contain saligenin derivatives salts and salicylates as complete or partial replacements for known sulfonate and phenate detergents, the resulting compositions advantageously contain sulfur-free detergents and do not have reduced performance attributes, providing “improved high temperature deposit performance, oxidative stability, lead and copper corrosion inhibition, and improved seal compatibility” (col. 1, lines 23-33).

Therefore, even if, *arguendo*, the proposed combination of Carrick and Komiya were to teach or suggest a composition comprising claimed components (A), (B), (C), and (D), the presently claimed composition consists essentially of these components, and thus excludes additional components which would affect the basic and novel characteristics of the composition. That is, the metal salt of a saligenin derivative of Carrick, which is a critical component of the Carrick composition, would be excluded from the present claims. Clearly, there would have been no motivation to modify the composition of Carrick to remove the metal salt of a saligenin derivative since it is an essential component which affects the basic and novel characteristics of the composition, including high temperature performance, oxidative stability, and corrosion inhibition. Further, no such motivation is provided by Komiya. Accordingly, the proposed combination of Carrick and Komiya does not teach or suggest a composition consisting only of claimed components (A), (B), (C), and (D), and reconsideration and withdrawal of the § 103(a) rejection are respectfully requested.

In view of the preceding Amendment and Remarks, it is respectfully submitted that the pending claims are patentably distinct from the prior art of record and in condition for allowance. A Notice of Allowance is respectfully requested.

Respectfully submitted,

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Encl: Petition for Extension of Time (one month)